

*Preliminary Draft*

**Emergency Medical  
Services Chapter**

**District of Columbia  
State Health Systems Plan**

**State Health Planning and  
Development Agency  
District of Columbia  
Department of Health**

# EMERGENCY MEDICAL SERVICES – PRELIMINARY DRAFT

## EMERGENCY MEDICAL SERVICES

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# EMERGENCY MEDICAL SERVICES – PRELIMINARY DRAFT

## EMERGENCY MEDICAL SERVICES

### I. INTRODUCTION

Emergency Medical Services (EMS) is commonly defined as the continuum of care which commences with the illness/injury incident, continues with a period of pre-hospital care and transport to a hospital and concludes with hospital-based care. The hospital based care is normally delivered in the Emergency Department. Upon discharge from the Emergency Department, the patient is either admitted as an inpatient in the hospital or is discharged.

EMS encompasses ambulance dispatch, first response to the scene of illness/injury by an ambulance or other emergency vehicle(s), transport to the hospital by ground or air, and hospital-based trauma care/emergency medicine.

An efficient and systematic delivery of EMS saves lives, reduces disability, and should contain all of the following components:

- Rapid, reliable public access to emergency medical services;
- Dispatch of the appropriate ambulance unit to the scene of injury;
- Appropriate on-scene emergency medical care;
- Rapid transport to an appropriate emergency care facility; and,
- Continuity of care until the injured person is either admitted to an acute care facility or discharged.

### II. BACKGROUND AND TRENDS

The District of Columbia's EMS system includes the Department of Health's (DOH) Emergency Health and Medical Services Administration (EHMSA); trauma centers; emergency departments; managed health care providers, the Emergency Management Agency (EMA) and first responder units from DC Police Department (DCPD), DC Fire and Emergency Medical Services (DCFEMS), federal police agencies, Metro Transit Police, Capitol Hill Police, U.S. Park Police; and private ambulance services. The EMS System requires constant monitoring, evaluation and change to meet the emergency medical needs of those who live, work and visit in the District of Columbia.

The DCPD answers all emergency calls (9-1-1). Requests for fire suppression and ambulance responses are transferred to the D.C. FEMS communications center for the dispatch of emergency personnel and equipment. Commercial ambulance companies provide non-emergency services (See Appendix 1). Some provide basic life support (BLS) and others, advanced life support (ALS) as well.

The Fire Suppression Division of the D.C. FEMS provides first response to emergency medical incidents, with each engine and truck company is staffed with a District of

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Columbia certified EMT. When no ambulance unit is available, first responders may be dispatched to render aid until an ambulance is available. The distribution of first responders throughout the city has reduced average response time.

The District's EMS is a two-tiered system providing both Basic Life Support (BLS) and Advanced Life Support (ALS) services. BLS services require the placement and use of ambulances and equipment, which meet national specifications established by the U.S. Department of Transportation. District regulations require that these vehicles be staffed by at least two Emergency Medical Technicians-Basic (EMT-Bs). These EMT-Bs must be capable of providing patient stabilization (airway clearance, hemorrhage control, initial wound care and fracture stabilization). Treatment by EMT-Bs is non-invasive. Communications in a BLS system must provide for single access, a central or centrally coordinated dispatch, and on-line/off-line medical control.

Advanced life support (ALS) services require adjunctive equipment, cardiac monitoring, defibrillation, intravenous lifeline and drug infusion. In ALS systems, vehicles must be staffed by EMT-paramedics (EMT-Ps) who provide additional care in the field. In addition, paramedics provide patient resuscitation using specific invasive measures which include: endotracheal or intubation, intravenous drug therapy, and specific cardiac dysrhythmia detection and control, medication and electro-conversion. Such intervention should only be done while the paramedic is under the direct medical control of a physician. Thus, communications must allow for direct voice contact and advanced biomedical telemetry between all field personnel, resource (base station) and receiving hospitals. An additional requirement of the ALS system is the categorization and designation of facilities within the area. Transport, triage, treatment and transfer protocols must be standardized and implemented. This is also a requirement also for BLS. Access to the system is through an enhanced 9-1-1 system.

The Department of Health's Emergency Health and Medical Services Administration (EHMSA) is responsible for:

- Developing and administering the state emergency medical services plan;
- Assisting in the review of Certificate of Need applications related to emergency medical services;
- Administering rules and regulations promulgated for licensing and inspecting ambulances;
- Inspecting and certifying ambulance vehicles;
- Training and certifying paramedic and emergency medical technician personnel, and
- Developing EMS regulations.

The Mayor's Emergency Medical Services Advisory Committee (EMSAC) advises the Mayor on emergency medical issues - recommending changes to improve operations and the quality of medical care being rendered.

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### **Coordination with the Federal System**

As the nation's capital, the District of Columbia is a prime target for chemical, biological and/or nuclear attack. In response to that threat, the District's EMS program has become an integral component of the federal EMS system. EHMSA, DCFEMS and the District's Emergency Management Agency (EMA) work with the affected federal agencies to ensure that the local impacts of national emergencies are addressed in an efficient and coordinated manner – from the assessment of chemical, bomb and biological threats to the transport, triage and treatment of injured persons.

The District's EMS agencies also assist federal agencies by providing emergency coverage for many national and international events held in the District. As preparation for these activities, the District's emergency personnel participate in joint training and exercises with federal agencies.

### **District's Role in Response to Bioterrorism and Weapons of Mass Destruction**

The District of Columbia is a participant in a variety of federal and regional plans, which have been prepared and implemented to address the threat of bioterrorism and weapons of mass destruction. The principal document is the District's Response Plan which sets forth the responsibilities of each function: transportation, communications, public works and engineering, firefighting, information and planning, urban search and rescue, hazardous materials, food, energy, law enforcement, media relations, donations and health and medical care. In order to avoid confusion among the District's Response Plan and the other applicable plans, the DOH is responsible for the coordination of emergency medical treatment among all health providers within the District – individual practitioners, clinics and hospitals.

### **Coordination with Regional Systems**

The District's EMS system is a part of the Federal Government's Region V EMS system. Region V is responsible for coordination of health and emergency medical care, which no single jurisdiction can provide on its own. Region V includes the District, the City of Alexandria and the counties of Fairfax, Arlington, Loudon and Prince William in Virginia; and the counties of Prince George's, Montgomery, Calvert, Charles and Saint Mary's in Maryland. Each of these jurisdictions has entered into agreements through the Metropolitan Washington Council of Governments (COG). COG serves as the designated regional coordinator and communications conduit for emergency alerts, regional emergency disaster response, mutual aid assistance and EMS transport. In response, the Department of Health's Emergency Health and Medical Services Administration, has primary responsibility for the coordination of medical services in case of a major disaster.

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### **1. National Trends in Emergency Department Care**

The incidence of emergency department care in the United States was remarkably stable throughout the 1990s. According to the National Hospital Ambulatory Medical Care (NHAMC) Survey conducted by the Centers for Disease Control<sup>2</sup> in 1992, there were 35.7 emergency department visits per 100 persons and 37.8 visits per 100 persons in 1999 (National Center for Health Statistics, 2001). While the percentage increase in visits over the period was only marginal, the actual number of emergency department visits increased from 89.8 million visits during 1992 to 102.8 million visits in 1999. The increase in visits was consistent with the growth in the population.

Several trends are noted in the NHAMC survey of emergency department visits related to age, payer, primary cause of visit, and availability of prescription drugs. Specifically, from 1992 to 1999:

- The percentage of emergency department visits by Medicaid patients declined by 23 percent, while Medicare and self-pay patients increased by 14 percent and 20 percent, respectively. Nevertheless, the utilization rate for Medicaid patients was 64.3 visits per 100 persons. The utilization rate for Medicaid patients was well above the utilization rate for privately insured patients (20.5 per 100 persons), Medicare patients (42.6 per 100 persons) and self-pay patients (20.5 per 100 persons). Almost one-half of Medicaid emergency department visits consisted of children under age 18 years old (46.5 percent).
- The rate of illness-related emergency department visits increased for the general population from 21.0 visits per 100 population to 24.0 visits per 100 population. The most common symptoms reported were stomach and abdominal pain, cramps, spasms, chest pain and fever.
- The frequency of injury-related emergency department visits decreased slightly, from 14.7 visits per 100 persons in 1992 to 13.8 visits per 100 persons in 1999. Almost 80 percent of injury-related visits in 1999 were a result of un-intentional injuries, including falls (20.0 percent), striking against or being struck accidentally by an object or person (11.3 percent) and motor vehicle injuries (10.9 percent). Approximately 4.1 percent of visits were a result of assault.

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<sup>2</sup> The NHAMCS uses a four-stage probability sample comprised of 376 hospitals nation-wide.

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- The use and availability of more sophisticated medications in the emergency department has increased. The most common classes of drugs administered during an emergency department visit included medications for: (1) pain relief, (2) antibiotics, (3) upper respiratory ailments, (4) heart and kidney diseases, (5) neurological diseases and (6) hormone replacement therapy. These classes of medication have increased 34 percent, from 132 mentions of various medications per 100 emergency department visits in 1992 to 157 mentions in 1999.

### **2. Local and Regional Trends in Emergency Department Care**

While there was a national increase in emergency department utilization during the early 1990's, the District's emergency department visits declined from 1990 through 1997. However, there was an unexplained increase from 1998 through 2000. (See Appendix, Emergency Department Visits in the District of Columbia - 1994-2000) In all probability, the increased number of emergency department visits was caused by a combination of the rise in the District's population during the late 1990s and the number of residents without health insurance (DCFEMS).

### **3. Impact of the District Health Care Alliance**

Historically, uninsured persons have been the predominant users of the District's emergency departments. The District's Health Care Alliance was developed in June 2001 specifically for this population - to provide a source of scheduled medical treatment and a payment mechanism for the uninsured. This availability of convenient medical treatment should improve health among uninsured persons and reduce the number of non-traumatic emergency department visits. The Alliance has enrolled approximately 28,000 uninsured District residents. Although there has not been sufficient time to conclude success, the percentage of non-emergency transports by the DCFEMS decreased from 54% during calendar year 2001 to 49% during calendar year 2002.

### **4. Significant Issues Concerning the Emergency Medical System**

The major issues affecting delivery of EMS care are emergency department (a) overcrowding, (b) adoption of the prudent layperson's standard, (c) EMS information systems and trauma registry, (d) workforce issues, (e) need for public and professional education concerning use of emergency services for non-emergency care, (f) response time, (g) integration of federal and local agencies, and (h) formulation of regulations.

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### *a. National and Local Emergency Department Overcrowding*

According to the American College of Emergency Physicians (Publication 2001a), resolving Emergency Department overcrowding should be a national priority requiring cooperation from managed care plans, uncompensated care pools and emergency departments. The principal causes for national overcrowding are shortages of emergency

personnel and equipment, an increase in prevalence of severe and chronic illnesses and a growing population.

Another factor contributing to increased utilization nationally is the impact of the 1986 Emergency Medical Treatment and Labor Act (EMTALA). EMTALA was designed to prevent hospitals from either refusing to treat emergency patients or transferring them to public hospitals because the patients are unable to pay or are covered by Medicaid.

Under EMTALA, Emergency Departments have three basic obligations:

- They must provide a medical screening examination to determine whether an emergency medical condition exists.
- Where there is an emergency medical condition, and if the hospital has the required facilities, the hospital must treat the patient until stable.
- The patient may be transferred pursuant to EMTALA standards (American College of Emergency Physicians, 2001a).

The best available evidence of local overcrowding is the number of times that ambulances are in route to a hospital emergency department and have been diverted to a different hospital or hospital emergency departments have been closed. (See Table \_\_\_\_)

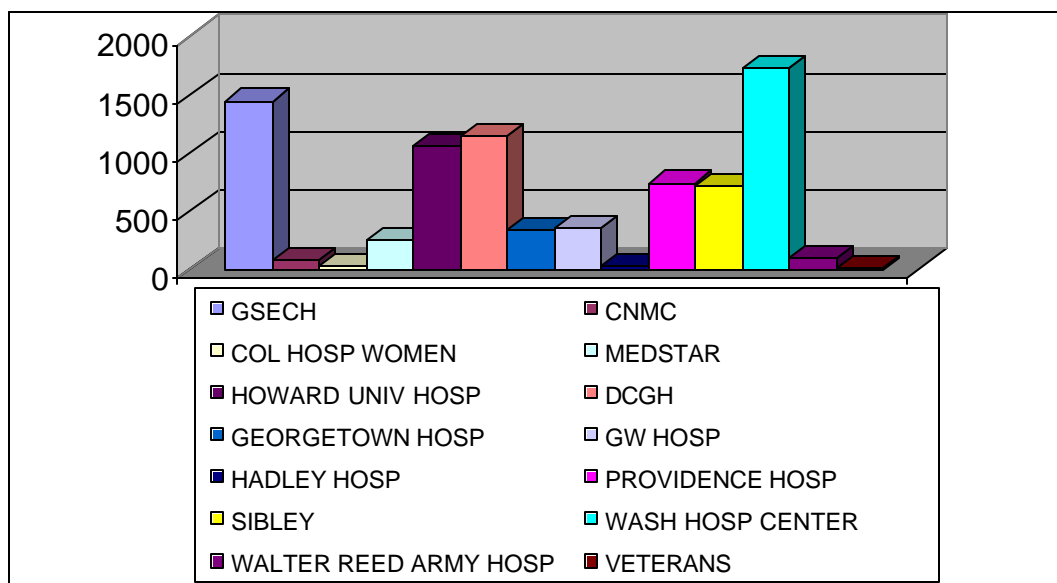


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### *b. Emergency Department Diversion*

Diversions often occur because hospital emergency departments do not have the necessary resources, such as staff and available inpatient beds to safely accept additional emergency department admissions. Under these circumstances, hospital emergency department officials request that ambulances take patients to another hospital which has the appropriate staffing. These conditions are often temporary and may only last a few hours.

**Figure 1. Hours of Closure and Diversion by Hospital for 2002 in the District of Columbia**



Source: D.C. Fire EMS Department, Office of Program Evaluation, 2002

There are four level I trauma and eight emergency departments, including Children's Hospital, in hospitals in the District. Figure 1 shows the number of hours during which emergency rooms have either had 9-1-1 patients diverted to a different facility or during which the emergency rooms have been closed. Requests by emergency rooms for authorization to divert ambulances or to close the emergency departments to new patients must be approved by the DCFEMS.

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The most frequent reasons for requesting diversion or closure during 2002 were:

- Insufficient nursing personnel to staff the emergency department and inpatient units – the overall lack of staff is affecting all hospital departments and
- Insufficient emergency room bay space – emergency departments generally reserve a minimum number of beds (1-3) for Code One emergencies (stroke, heart attack, gunshot victims). When the emergency department reaches that critical level, it requests that patients who are other than Code One be diverted to other facilities.

According to District of Columbia Hospital Association (DCHA), the continuously increasing demands on emergency departments were not effectively considered in bed space methodologies for determining hospital bed space – emergency department and hospital inpatient. The DOH is collaborating with emergency department managers; DCHA, EMSA, DCFEMS and other local providers to develop a bed space need methodology which considers staffing, facility capacity and coordinated use of all facilities.

### *c. District's Adoption of "Prudent Layperson" Standard for Emergency Care*

Prior to EMTALA, disputes arose locally between insurance carriers and their insured over whether emergency treatment would be covered. These disputes affected the insured's personal responsibility for emergency treatment and the District hospital's ability to be compensated for providing treatment to insured persons. The District resolved those disputes through adoption of the "prudent layperson" standard. Under the "prudent layperson" standard, health insurance plans must base reimbursement on the symptoms, which the patient complained of when seeking emergency department treatment, even if the patient's diagnosis does not support emergency transport and treatment.

The prudent layperson standard has been adopted in 32 states in addition to the District of Columbia (ACEP 2001d). Reports received to date suggest that the prudent layperson standard does not increase the number of non-urgent emergency department visits.

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### d. EMS Information System and Trauma Registry

According to the *EMS Agenda for the Future*, published by the National Highway Traffic Safety Administration (NHTSA1996), the slow development of EMS and Trauma Registry data collection and analysis systems has hampered planning, evaluation and research on EMS efficiency and effectiveness.

The District is responding to that need for data analysis by developing an EMS Information System (EMSIS) and Trauma Registry. The data in the EMSIS will be used to assess quality of care, determine the need for additional or differing kinds of services as well as to make decisions on resource allocation. The collected data and analyses will be shared with those who contribute information or who are involved in health planning: community leaders, policymakers and other EMS stakeholders. The EMSIS will include relevant data from the databases of federal, state and regional organizations in which DOH participates, in conjunction with data provided by commercial ambulance services and private health care providers.

The Trauma Registry will be the repository of information on persons suffering traumatic injuries, such as patient demographics, patient injury assessments, treatments, medications administered and hospital admissions/discharges. Although local hospitals and the DCFEMS currently collect some of this data; however, the information is not maintained in a central location for analyses.

### e. Workforce Issues

Local shortages of Emergency Medical Technicians (EMT), Paramedics and nurses causes understaffing; shortages of on-duty ambulances and contributes to delayed response time to the scenes of emergencies. The staffing shortage EMT and Paramedic shortages are expected to become even more critical when the NHTSA issues new standards for paramedic training. The new standards are expected to increase the one-year paramedic-training curriculum to a two-year program. In addition, the new standard may require that the training be performed in a college or university.

This new NHTSA certification standards are expected to have serious consequences for the District. Some of the consequences may include:

- Rendering many current paid and volunteer paramedics ineligible to continue to work without additional education,
- Downgrading of current paramedics to the basic level certification,
- Severely limiting the opportunities for local high school graduates to obtain paramedic qualifications because only one local university offers the two-year training program.

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DCFEMS is equipped with 36 emergency vehicles (17 are advanced life support vehicles and 19 are basic life support vehicles). Each ALS unit is staffed by two Paramedics and each BLS unit is staffed by two Emergency Medical Technicians. DCFEMS analyzed the patterns of calls for service and developed a resource deployment schedule that places the largest number of personnel and equipment on duty consistent with demand. The period for the largest number of ‘9-1-1 calls’, seven days a week, is from 1pm until 9pm. The period during which there are the fewest 1am until 9am (See Table 2).

**Table 2. DCFEMS Peak Staffing Schedule**

TIME	AMBULANCE STAFFED AND ON DUTY
1am to 9am	22 Units
9am to 1pm	28 Units
1pm to 9pm	36 Units
9pm to 1am	28 Units

Source: DCFEMS

The four page chart titled “Average EMS Calls per Hour by Station Catchment” which is included in the Appendix is the graphic representation of the Peak staffing Schedule. The first page is for the period 1am – 9am. The standard which is accepted by NHTSA, International Association of Firefighters and Fire Prevention Institute set .42 responses per 12 hour shift. The E numbers along the base of the chart are designations for fire stations. The bars are the numbers of calls for emergency response which an individual station received during the time period. The “number of units” is the number of units which were assigned to that station during that period. For example, station E10 responded to .64 calls per hour during that time period and had 2 “units” (emergency equipment) During that same period, station E29 received .04 calls during that period and did not have a unit. There were a total of 28 units in service during the 1am – 9am time period.

During the heaviest call time, 1pm to 9pm, there should have been 42 units in service. However, DCFEMS only had 36 units in operation. The disparity between available resources and need contributes to slower response times.

### f. Use of EMS Resources for Non-Emergency Care

The use of EMS resources for non-emergency care affects both pre-hospital and hospital emergency care. Responses to 9-1-1 calls which are not actually emergencies, remove vehicles and personnel from the inventory of resources available to respond to true emergencies. While 54% of the 144,129 DCFEMS emergency responses during calendar year 2001 were for cases who were non-emergencies, that percentage of non-emergency cases decreased during calendar year 2002 to 49% of the 153,000 responses. The “non-emergency patients” had suffered uncomplicated fractures, minor burns, or lacerations (DCFEMS, 2002). Responses to non-emergency patients is an expensive use of limited resources.

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### *g. Time to Respond*

The time required to respond to a “9-1-1 call” is a combination of the following:

- “Dispatch Time” - the time from receipt of a call until the request for assistance is assigned to a specific emergency unit (recommended by the National Fire Prevention Association as one minute or less for at least 90% of the emergency calls)
- “Turnout Time” - the time from the emergency unit’s receipt of the assignment from the dispatcher until the wheels of the emergency vehicle are rolling out of the station (recommended by the National Fire Prevention Association as one minute or less for at least 90% of the emergency calls) and
- “On the Road Time” - the time from the wheels rolling out of the station to arrival on scene (recommended by the American Heart Association as four minutes or less for basic life support calls and eight minutes or less for advanced life support calls for at least 90% of the emergency calls)

The aggregate recommended response time is six (6) minutes or less for basic life support calls and 10 minutes or less for advanced life support calls. The average response time in the District during July-December 2001 was 10.21 minutes for advanced life support patients 90% of the time and 12 minutes for basic life support patients 90% of the time. Insufficient numbers of personnel and vehicles; vehicles not in service because of needed repairs and prolonged “drop times” at hospitals contributed to prolonged response times.

Hospital “drop time” is the amount of time that the emergency personnel remain at the hospital after the patient has been delivered until the time when hospital staff accept medical supervision of the patient. The lengthy “drop times” are reported by some hospitals to be caused by the lack of appropriate staff to meet the demand. While the emergency equipment and personnel are at the hospital after delivering a patient, they are not available to respond to new calls.

**Table 3. Number of Transports and Average Transport Times to District Area Hospitals in 2000**

Hospital	Total Number of Transports	Average Transport Time (minutes)
D.C. General Hospital	15,448	11:39
Howard University Hospital	14,384	11:37
Washington Hospital Center	10,646	13:11
Greater Southeast Community Hospital	8,970	11:34
Providence Hospital	8,731	12:07
Children’s National Medical	5,539	13:21

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Hospital	Total Number of Transports	Average Transport Time (minutes)
Center		
Georgetown University Medical Center	3,164	13:17
Hadley Memorial Hospital*	3,004	15:48
Sibley Hospital	2,183	16:55
Veteran's Administration	1,528	12:57
MedStar**	665	11:47
Walter Reed Army Medical Center	241	16:57
Columbia Hospital for Women***	107	14:45

Source: CY 2000 information furnished by D.C. Fire and EMS.

\*No longer receiving ambulances \*\* Trauma receiving center at Washington Hospital Center \*\*\* Columbia Hospital for Women has since closed.

The “response time” standard is the period of time from receipt of the “9-1-1 call” until emergency personnel arrive at the scene of the injury. While this standard has been generally accepted by emergency professionals for the assessment of emergency “responses”, a new standard which includes the time until the injured person arrives at the emergency department has been proposed. The new standard is being proposed because emergency department overcrowding and ambulance diversion are causing lengthy delays before the injured person is treated in the emergency department. The proposed standard is thought to be more accurate.

### *h. Integration of DOH and DC Fire and EMS (DCFEMS) Bureau and the Federal Emergency Management Agency (FEMA)*

The District’s emergency medical system is currently divided among the Department of Health, DCFEMS and the Federal Emergency Management Agency. Currently, DCPD receives the emergency calls, DCFEMS dispatches emergency personnel and DOH is the regulatory authority for commercial ambulance services. Although the division of responsibilities has worked effectively to date, the District should continue to periodically assess the process and the utilization of its limited staff resources.

### *i. Regulation of Commercial Ambulance Services*

While the DCFEMS responds to “9-1-1 calls”, commercial ambulances are very important to the medical community. Commercial ambulances provide inter-facility transportation (transporting patients from one medical facility to another). Prior to 1990, commercial ambulance services only provided basic life support transportation. However, inter-facility transports are increasingly requiring that commercial ambulances transport patients who need more sophisticated ALS services. Many of these specialized

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ALS services are not covered by current licensing regulations; thus, impeding the collection of comprehensive data.

The combination of need for more sophisticated transport services and the lack of applicable licensing regulations contributes to the use of commercial ambulances to transport patients requiring advanced life support services when the ambulance company may not be qualified to provide that service.

In order to determine current and future requirements for commercial, non-emergency ambulances, the DOH must have accurate information on need, utilization and capacity of existing resources.

### III. SUMMARY RESOURCE INVENTORY AND UTILIZATION OF SERVICES

#### A. Pre-Hospital Care (Emergency and Inter-Facility) Resources

The District of Columbia Police Department receives “9-1-1 calls” and distributes requests for service either police, fire or ambulance personnel. Ambulance calls are directed to DCFEMS, which dispatches the appropriate emergency vehicle(s) based on distance to available emergency vehicles from the injury scene; reported severity of injury/illness; and the number of persons involved at the scene of injury/illness. Emergency vehicles include fire engines staffed by Paramedics and/or Emergency Medical Technicians-Basic, rapid response vehicles which take Paramedics to the scene but which cannot transport patients, basic life support ambulances staffed by EMTs, and advance life support ambulances staffed by Paramedics.

There are 36 ambulances operated by the DC Fire and EMS Department (See Table 4.). The 36 ambulances include 17 advanced life support units and 19 basic life support units. In addition, there are two rapid response units and five paramedic engine companies providing first response to the most serious emergencies until an ambulance arrives at the scene. The 35 ambulances are located at DCFEMS stations throughout the District and deployed based on historical utilization patterns of illness and injury. The DC Fire & EMS continuously monitors ambulance utilization to make decisions on ambulance station assignments.

**Table 4. Ground Ambulances in the District of Columbia**

Service	Basic	Advanced	Total
D.C. Fire & EMS	19	17	36
Commercial Services	59	14	73
<b>Total</b>	<b>78</b>	<b>31</b>	<b>109</b>

Source: D.C. Fire & EMS and Office of Emergency Health and Medical Services, 2001.

There are 73 commercial ambulances in the District. The 73 commercial ambulances include 59 BLS and 14 ALS units in five commercial ambulance services. The

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commercial ambulance services are licensed by the Department of Health's EHMSA to provide inter-facility transports.

In addition to the DCFEMS and commercial resources, the following emergency transportation services are available in the District:

- Bethesda/Chevy Chase Rescue Squad (BCCRS), exempted by DOH to provide on-site emergency response in D.C.'s northwest quadrant;
- American Red Cross which provides emergency transport of blood products;
- American Heart Association which provides emergency transport of organs for transplantation;
- Georgetown Emergency Response Medical System (GERMS), operated by Georgetown University Hospital in conjunction with its EMT-basic training program;
- National Capital REACT, a volunteer group that has agreed to provide radio backup using the Citizen's Band frequency in the event that there is a breakdown in emergency communications systems;
- U.S. Capitol Police Department, which occasionally provides emergency response and transport.

Prior to increased security in the Washington, DC airspace, MedStar and the U.S. Park Police provided helicopter ambulance services in the District. Increased security measures have limited helicopter activity to law enforcement agencies.

There are approximately 3,000 EMT-Basics (EMT-Bs), 150 EMT-Paramedic personnel and five EMT-Intermediate Paramedics registered within the District. EMT-Bs are qualified to provide patient stabilization, airway clearance, hemorrhage control, initial wound and fracture stabilization. Paramedics are qualified to provide patient resuscitation using specific invasive measures, some of which include endotracheal or esophageal intubation, intravenous drug therapy, cardiac dysrhythmia detection and subsequent treatment by medications and/or mechanical defibrillation.

### **B. Emergency and Inter-Facility Transport Utilization**

During calendar year 2000, the following resources provided a total of 76,517 emergency transports in the District: DCFEMS provided 74,667 emergency patient transports, Bethesda-Chevy Chase Rescue Squad provided 1,200, and the Georgetown Emergency Response Medical System provided 650 emergency transports on the university campus.

The District's utilization rate of 13.38 emergency transports per 100 persons was more than twice the national average of 5.4 emergency transports per 100 persons.

A variety of factors contribute to the District's high emergency transport rate, including:



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- The city's large tourist and commuter populations;
- The District is an all urban area, while the national rate includes urban and rural communities (rural communities use substantially lower rates of emergency care transports because there are substantially fewer facilities/services);
- The large number of uninsured persons and Medicaid patients among the resident population. Uninsured persons and Medicaid patients historically use emergency departments at a rate higher than the population as a whole;
- The District's elevated rates of morbidity and mortality from heart disease, cancer, and diabetes, and;
- The elevated rate of intentional injury in the District. During 1998, there were 37.5 deaths per 100,000 District residents caused by firearm injuries, compared to 11.3 deaths per 100,000 persons nationally, and 41.9 deaths per 100,000 District residents from homicide and legal intervention, compared to 6.8 deaths per 100,000 nationally (NCHS, 2000).

Table 5 provides information on emergency "9-1-1 calls" and inter-facility commercial transports in the District of Columbia during calendar year 2000. In addition to the 76,517 emergency ambulance transports discussed above, MedStar and the Park Police provided 30 and 34 emergency air transports, respectively, originating in the District of Columbia.

**Table 5. Ambulance Transports Originating in D.C. in CY2000**

<b>Service Provider</b>	<b>Emergency Transports</b>	<b>Inter-Facility Transports</b>	
	<b>Ground</b>	<b>Air</b>	<b>Ground</b>
D.C. Fire & EMS	74,667	NA	NA
All American	NA	NA	***
Lifestar	NA	NA	1760**
Silver Spring	NA	NA	4800**
Emergency Ambulance Services	NA	NA	3600*
Rural Metro	NA	NA	***
Bethesda/Chevy Chase	1200	NA	NA
MedStar	NA	30*	NA
Park Police	NA	34	NA
Georgetown	650	NA	NA

SOURCES: Telephone survey of service providers; web site for Bethesda/Chevy Chase Rescue Squad ([www.bccrs.org](http://www.bccrs.org))

\*Estimate

\*\*Includes 200 ALS, 1500 BLS, and 60 critical care transports.

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\*\*\*Proprietary information.

The five commercial ambulance services only provide non-emergency inter-facility transports from hospital to hospital, hospital to skilled nursing facility, hospital to home. All five services provide BLS, and three services provide ALS services. In 2000, these services provided nearly 10,000 inter-facility transports exclusive of All American and Rural Metro, from which no data are available.

The number of DCFEMS emergency transports to District hospitals continued to increase from 76,517 transports during calendar year 2000 to 77,995 during 2002. Although June 2001 data is not available, it is estimate that the 2001 total exceeded the 2000 figure. The distribution of those trips is shown on the table below

Hospital	2000	2001	2002
GSECH	8,970	9,292	11,060
Children's Hospital	3,164	3,585	4,162
Columbia Hospital	107	149	81
MedStar	665	2,573	7,994
Howard Hospital	14,384	13,933	14,163
DCGH	15,448	5,957	4,720
Georgetown Hosp.	3,004	3,350	4,236
George Washington	8,731	8,467	11,069
Hadley Hospital	2,183	158	0
Providence Hosp.	5,539	6,181	8,561
Sibley Hospital	1,583	1,639	2,263
Wash. Hosp. Ctr.	10,646	8,751	6,472
Walter Reed	241	227	290
Vet. Administration	1,528	1,701	2,312
Prince George GH	97	336	524
Fire Dept. Clinic	24	12	88
Wash. Adventist	8	5	
TOTALS	76,517	66,316 (June 2001 not included)	77,995

Source: D.C. Fire & EMS Department summarized data on ambulance trips. \*MedStar is the Major Trauma Receiving Unit at Washington Hospital Center. NOTE 1: D.C. General Hospital and Hadley Memorial Hospital are no longer ambulance destinations. (Note 2: although DCFEMS transports increased significantly from calendar year 2001 to 2002, it is later reported in this chapter that the percentage of non-emergency cases decreased during 2002)

Although DCGH no longer provides Level I trauma services, the emergency department continues to serve less serious injuries. Table 4 describes the number of ambulance visits that the hospital experienced since the closure of DCGH and the inception of the Health Care Alliance program.

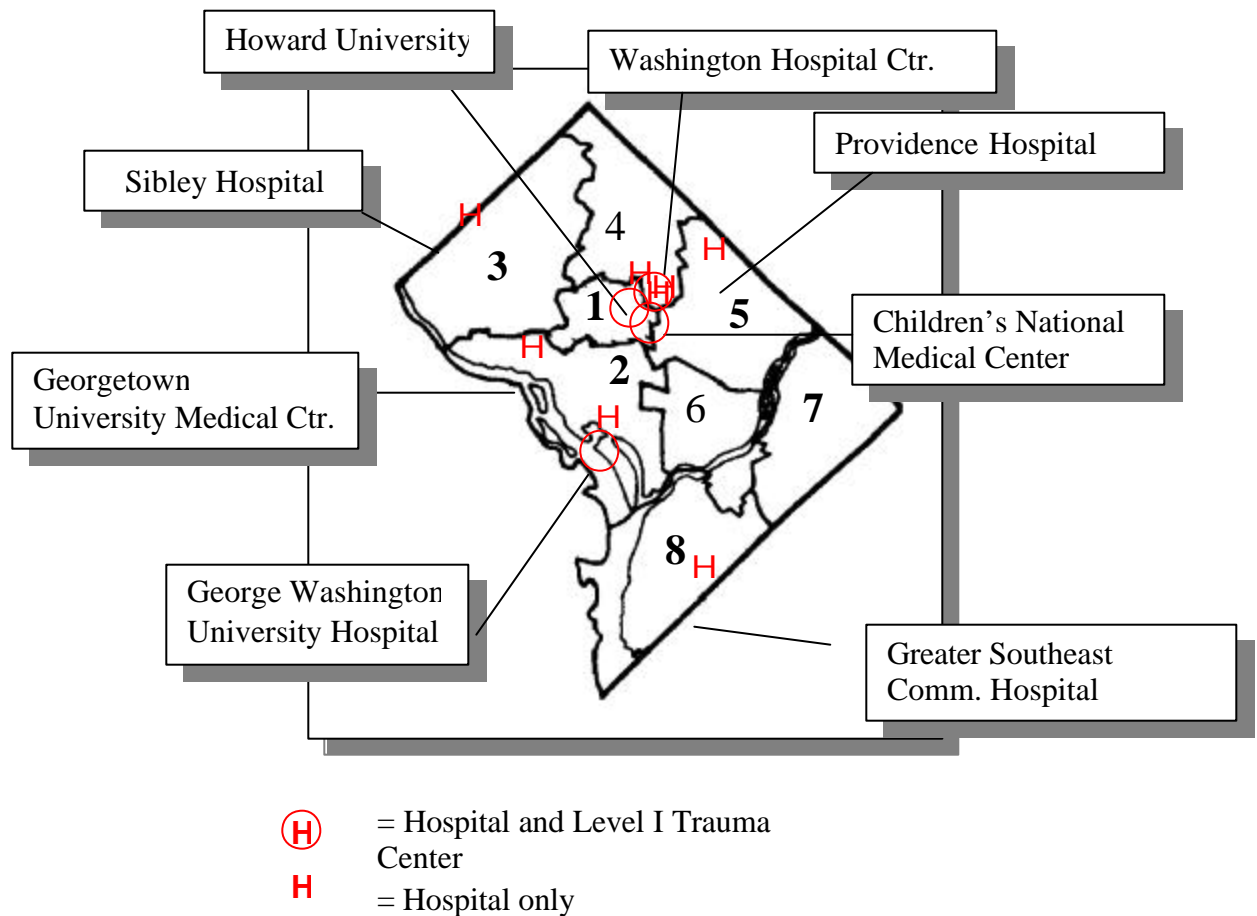
### C. Resources for Hospital-Based Care

Level I trauma centers are qualified to treat the most severely injured persons. There are four Level I Trauma Centers in the District: Howard University Hospital, Washington Hospital Center, George Washington University Hospital and Children's National

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Medical Center (pediatric patients only). In addition, four acute health care facilities without trauma centers provide emergency care (Sibley Hospital, Providence Hospital, Greater Southeast Community Hospital and Georgetown University Hospital, D.C. General Hospital). Although not open to the general public, the federal Veterans Administration Hospital and Walter Reed Army Medical Center are able to provide emergency services in the event of a major disaster. Currently, there are no Level II or Level III trauma centers in the District.

**Figure 2. Map of Acute Care Hospitals and Level I Trauma Centers in the District of Columbia.**



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**Table 6. Critical Care and Emergency Medical Services in the Washington, D.C. Metropolitan Area, September, 2001**

<b>Hospital</b>	<b>Adult Medical</b>	<b>Pediatric Medical</b>	<b>Adult Major Trauma</b>	<b>Pediatric Major Trauma</b>	<b>Adult Minor Trauma</b>	<b>Pediatric Minor Trauma</b>	<b>Critical Burns</b>
Greater Southeast	✓	✓			✓	✓	✓
Children's		✓		✓		✓	✓
Columbia Hosp. For Women							✓
MedStar*			✓				✓
Howard University	✓	✓	✓		✓	✓	✓
Georgetown	✓	✓	✓		✓	✓	✓
George Washington	✓		✓		✓		✓
Providence	✓				✓		✓
Sibley	✓				✓		✓
Washington Hospital Center	✓				✓		✓
Walter Reed	✓				✓		
Veterans	✓				✓		
Prince George's	✓	✓	✓		✓	✓	✓
Holy Cross Hosp.	✓	✓			✓	✓	✓
Washington Adventist	✓	✓			✓	✓	✓
Southern Maryland	✓				✓		
Fort Washington	✓				✓		

Source: 2001 Pre-hospital Medical Guidelines (Final Draft). D.C. Fire and EMS.

\*Trauma receiving center at Washington Hospital Center.

The following hospitals in the District provide highly specialized critical care services:

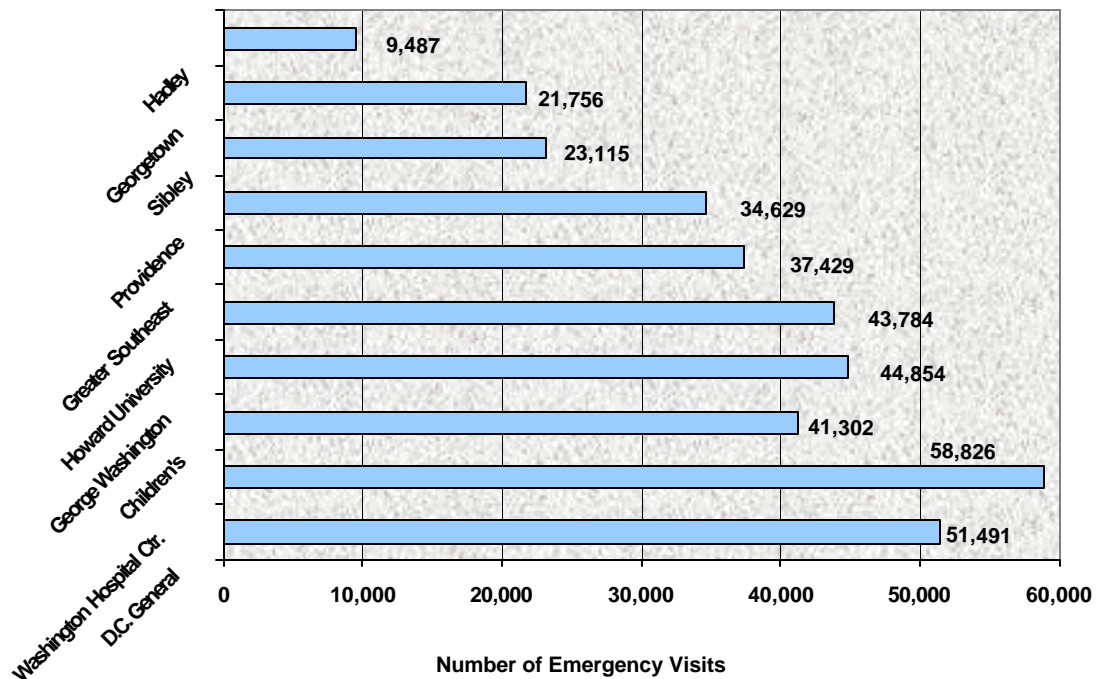
- George Washington University Hospital maintains a hyperbaric chamber for toxic gas inhalations, infections and diving sickness;
- Decontamination Units are located at George Washington University Veterans' Administration Hospital and Walter Reed Army Medical Center.
- The Emergency Psychiatric Response Division operated by the Department of Mental Health on the Campus of D.C. General Hospital provides psychiatric emergency services. In addition, all District acute care hospitals, with the exception of Sibley, provide psychiatric emergency services.

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### C. Utilization of Hospital-Based Care

During calendar year 2000, there were approximately a total of 367,000 visits to District emergency departments (See Figure 2). Although the total number of emergency visits includes commuters and visitors, the majority of the persons served were District residents. The District's rate of 64.2 ER visits per 100 residents, as compared to the 1999 national rate of 37.8 per 100 residents, places a tremendous burden on the emergency medical system.

**Figure 2. Emergency Visits Provided by D.C. Hospitals in Calendar Year 2000.**



Source: D.C. Hospital Association Utilization Indicators, Calendar Year 2000.

The impact of the closure of DCGH in-patient beds on the supply of hospital-based trauma and emergency resources is a matter of considerable debate by providers and consumers. During 1999, DCGH's emergency room had 51,491 visits, an average of 41 visits per day. Although the emergency department never closed, there was a perception that emergency services were no longer available. During the first eight months of 2002 DCGH averaged less than 11.8 emergency visits per day. The majority of the persons previously treated by DCGH are now treated at the Greater Southeast Community Hospital, Washington Hospital Center, George Washington Hospital and Georgetown University Hospital.

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**IV. PROJECTIONS**

**A. Population – Number of Persons to Be Served**

The number of individuals who rely upon the District's emergency medical services includes residents, persons who regularly work here each day and tourists/visitors. Projections for future demand should include all of those individuals. The District's Office of Planning estimates that on any given workday, there are approximately 959,000 persons in the District. (572,059 residents + 272,000 non resident employees + 115,068 visitors)

**Resident Population**

The District of Columbia population for 2005 and 2010 are estimates prepared by the District's Office of Planning.

<b>Table 7.</b> <b><i>District of Columbia, Population Projection</i></b>	
1. US Census 2000	572,059
2. Projected for 2005	607,000
3. Projected for 2010	627,000
(1) US Census 2000 (2) The District of Columbia Office of Planning has prepared projections at five-year intervals for 2000 through 2020. This is the estimated figure for 2005. (3) The District of Columbia Office of Planning prepared projections at five-year intervals for 2000 through 2020. This is the estimated figure for 2010.	

Nationally, it is estimated that low-income persons use emergency departments at a rate higher than the general population (Ambulatory Medical Services Survey 2001).

## EMERGENCY MEDICAL SERVICES – PRELIMINARY DRAFT

<b>Table 8. Distribution of Population Projection by Race</b>		
	Census 2000	Projected Pop. 2005
	572,059	607,000
Black / African American (60%)	343,312	364,254
White (30.8%)	176,101	186,843
Asian/Islander (2.7%)	15,537	16,389
American Indian/Alaskan (0.3%)	1,713	1,821
Latino/Hispanic (7.9%)*	44,953	47,695
Other** (3.8%)	21,950	16,485
Two or More Races*** (2.35%)	13,448	14,266
* Person identified themselves as a racial group not included in the first four groups listed above. ** Person identified themselves as a member of two or more of the first four racial groups. ***As in past censuses, Hispanic/Latino is not a race category. Persons of Hispanic origin may be of any race. Because of overlapping of categories, the total equal more than 572,059. Source : District of Columbia Office of Planning		

### **Non-Resident Population**

The non-resident population is a combination of persons who work in the District but who do not reside here, together with the persons who visit each day. The non-resident workforce is estimated to be approximately 272,000 persons. The COG estimates that 21 million persons visit the District each year for a variety of purposes (tourists, demonstrators, etc.). Assuming an equal distribution of visitors over the course of a year, the average daily population is increased by an additional 115,068 persons.

Residents who commute to jobs outside of the District may diminish demand because of the time that they spend in other jurisdictions where emergencies can be treated. No adjustment is made in this analysis since no estimate is available. Each of these population estimates will be included in the total population for projection purposes.

### **B. Projected Utilization**

As noted above, decisions on the resources to be devoted for emergency medical services must consider all persons within the District on any given day (residents, non-resident employees and visitors). The Department of Health is developing a Trauma Registry as the central repository for information on persons receiving emergency medical services. In addition to information on injuries and treatment, the Trauma Registry will maintain demographic data on the injured person's residence, and reason for being present (visitor, employee). Until that database is

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available, the best available projection is based upon reported emergency visits during 2000. Projections for 2005 and 2007 are based on the reported frequency rate for calendar year 2000. See Table 9 for a projection of emergency department visits.

<b>Table 9 Projection of Emergency Department Visits For 2000 and 2005</b>			
Calendar Year		2000	2005
Total Population		572,059	607,000
Emergency Department Visits Reported by DCHA		367,000	380,409
Total DCFEMS “9-11 Responses” to ERs		126,982	131,621
Percentage of ER visits which are “9-1-1 calls		34.6%	34.6%

Source: District of Columbia Hospital Association, 2000.

Total population for 2005 is a projection by the District of Columbia Office of Planning and the Metropolitan Washington Council of Governments.

Emergency Department visits for CY2005 are based on CY2000 frequency rate.

**Number of Emergency Department Visits estimated by DCHA for CY2005 is 593,800.**

Thirty-four and six tenths percent (34.6) of the total District emergency department visits in were transported by DCFEMS in 2000. Applying this percentage to the 2005 projection of emergency visits would yield a total of 131,621 emergency responses by DCFEMS.

## V. HEALTH SYSTEM CRITERIA AND STANDARDS

High quality, culturally sensitive, and rapid emergency and trauma care services should be readily available to all people who visit, live, and/or work in the District of Columbia. Specific standards and criteria for the EMS system are discussed below.

### A. Availability

Hospital-based care must be available and accessible 24 hours a day, seven days a week to citizens and visitors to all eight Wards in the District of Columbia. Centralization of some critical care services (burn care, eye trauma, neonatal intensive care, etc.) is inevitable; however, urgent/emergent care and Level I Trauma Care should be available throughout the city, so that transport time of critical patients from the scene of an accident to the most appropriate critical care facility is minimized.



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The standards for availability include:

- Capacity for emergency and medical services to serve all citizens the District and visitors to the District at all times,
- Units deployed to reflect the locations and peak times of accidents and injuries in the District,
- DCFEMS units dispatched in less than one minute after the receipt of a call,
- Response times (from dispatch to arrival on the scene) for critical patients in 8 minutes or less 90 percent of the time, and for non-critical patients 16 minutes or less 90 percent of the time and,
- DCFEMS deployed (stationed in the field) no more than 45 percent of the time.

Achievement of these standards is an over-arching goal of the state health plan.

### **B. Accessibility**

EMS services must be accessible to persons who are injured at any location in the District.

### **C. Continuity**

Continuity of care is required from the point that a “9-1-1 call” is received through the provision of hospital-based care. Optimum continuity of care is achieved through appropriate stationing and dispatch of emergency response units; protocols for pick-up of the injured person at the scene; on-line medical control instructions to the first responders while the injured person is in transit to the hospital; treatment at the hospital and either discharge or admission.

In NHTSA 2000, it was recommended that EMS systems use ambulances to follow up with patients after hospital discharge. However, that approach would be an additional burden on the limited resources available in the District. The District recommends that discharged patients either visit their own physician or seek treatment at one of the primary care facilities.

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### D. Quality

A quality emergency medical service program must have the following elements:

#### 1. *Pre-Hospital Care*

##### a. *Pre-hospital staff certification and in-service training:*

The NHTSA sets standards for certification of Emergency Medical Technicians or Paramedics. A quality pre-hospital program will require that all staff be certified pursuant to NHTSA standards. The DCFEMS employees meet those standards.

##### b. *On-line medical control:*

On-line medical control is the system by which the DCFEMS first-responders to the scene of the injury are directed by a designated physician via telephone or radio, how to treat the injured persons such as instructions for emergency medications or procedures. The first-responders report to the physician the condition of the patient. The physician then authorizes treatment. In the District, the physicians based in the Level I Trauma Centers and Georgetown University Medical Center provide on-line medical control.

The standards for on-line medical control in the District are as follows:

- (1) Physician accountability for emergency care services must be established,
- (2) The ambulance and EMS training center must demonstrate a continuing relationship with an appropriately credentialed physician providing off-line medical control and/or physician monitoring,
- (3) The ambulance service must demonstrate a continuing relationship with an emergency department whose physician can provide 24-hour on-line medical control and,
- (4) The qualifications for an on-line and off-line medical control physician must include the following:
  - Board certification in emergency medicine or critical care medicine;
  - Maintenance of current D.C. licensure, and;
  - Responsibility and accountability for overseeing the quality and appropriateness of care rendered to patients.

##### c. *Minimum staffing:*

The minimum standard emergency vehicle staffing should be two basic EMTs shall staff for all BLS vehicles and two EMT-paramedics (or one EMT-paramedic, and one EMT-intermediate paramedic) for all ALS vehicles.

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### *2. Hospital-Based Care*

The American College of Surgeons certifies emergency/trauma centers. The four levels are described as: Level I, II, III or IV. All hospital providing emergency/trauma care should be certified at one of these levels.

#### **LEVEL I TRAUMA**

A Level I trauma center is the highest-level trauma center. Because of the large personnel and facility resources required, most level I trauma centers are university- based teaching hospitals. A Level I trauma center has patient acute care responsibilities and leadership in the roles of education, research and system planning. A Level I center should have greater than 1,200 trauma admissions per year. The surgical staff is usually in-house 24 hours a day, as well as surgery. A general surgical residency program and ATLS are two additional requirements. There is a research component to being a Level I center.

#### **LEVEL II TRAUMA**

A level II trauma center is also expected to provide definitive trauma care from a full range of services. The care given to trauma patients at a Level II center is the same as that provided by a Level I center. Surgeons are not in-house 24 hours a day, but promptly available. A Level II center may not provide comprehensive care. A Level II must also be a regional resource for education and injury prevention activities.

#### **LEVEL III TRAUMA**

A Level III center can provide prompt assessment, resuscitation, and stabilization of trauma victims arranging for possible transfer to a facility that can provide definitive trauma care. The availability of general surgeons is a requirement. Transfer arrangements or agreements are made with Level I and II trauma centers for patients requiring definitive care. Standardized treatment protocols must be in place.

#### **LEVEL IV TRAUMA**

A Level IV facility provides advanced trauma life support prior to patient transfer. This is usually in a more remote or rural area where no higher level of care is available. Many times this facility may be a clinic or a hospital that may not have a physician available. The Level IV institution is committed to provide optimal care within its resources. Transfer agreements with a higher-level trauma center is required. Treatment protocols are also necessary.

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### E. Acceptability

The District has always been an international city. Therefore, some of the barriers to the delivery of emergency services may include language and different perceptions of acceptable medical practices. In order for the injured person to accept and participate in treatment, the emergency personnel must be culturally sensitive. Cultural sensitivity enables the personnel to initially get the cooperation of the injured person and often family or witnesses at the scene in order to provide immediate care followed by transport of the patient to the hospital. Accordingly, emergency personnel need broad-based sensitivity training programs to deal persons from different cultures in distress. Topics should include sensitivity to sexual orientation, race, gender, and age.

### F. Cost

Cost is defined as the total expenses and economic consequence of the provision of services, including provider cost, consumer cost, opportunity costs and societal costs. Emergency care services should be provided to all District residents at a reasonable cost.

The standards governing cost are as follows:

- Emergency care providers should utilize and routinely adhere to generally acceptable accounting principles, which assures effective and efficient fiscal management and operation.
- Financial feasibility with audited financial statements illustrating at least six months operating expenses shall be demonstrated.
- An annual audit shall be submitted.
- Funding sources shall be identified and documentation provided to demonstrate that the business financially viability for at least three years from the initial date of operation.

## VI. GOALS AND OBJECTIVES

The following goals and objectives are designed to address the issues, problems and current and anticipated gaps in the EMS services delivery system.

### **Goal 1:**

**Establish EMS Information system regulation and standards for the assessment of quality of care.**

### **Objectives:**

- 1.1 Develop EMS Management Information System and Trauma Registry Proposal in coordination with Emergency Service Stakeholders (DCFEMS, commercial ambulance services, hospitals, primary care facilities, individual

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physicians, etc). The proposal will state alternative strategies for staffing and equipment.

- 1.2 Introduce legislation to require ambulances and hospitals to report data required for management information system and Trauma Registry (mechanism of injury, severity of injury, diagnoses, procedures, treatments, outcomes and costs of pre-hospital and hospital-based emergency and trauma care).
- 1.3 Design, develop and issue a periodic (annual or semi-annual) *9-1-1 Report Card* on injuries, services provided and outcomes in comparison to national standards.
- 1.4 Conduct a study analyzing the qualifications of ambulance companies to provide sophisticated transport services.
- 1.5 Develop and implement regulations and protocols governing the operation of commercial ambulance services.
- 1.6 Change all basic life support transportation units to advanced life support transportation units by staffing them with EMT-Paramedic and Intermediate Paramedic personnel.
- 1.7 Design and provide EMT training in new protocols for pre-hospital care that meet emerging NHTSA standards, as well as new protocols for weapons of mass destruction, reporting of clinical syndromes and symptoms, field data collection, and DNR.
- 1.8 Establish within EHMS an enforcement division to ensure that current and emerging quality standards for all facets of EMS are achieved.

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### **Goal 2:**

**Strengthen administrative, clinical and operations protocols to provide more efficient and effective care.**

#### **Objectives:**

- 2.1 Complete assessment of current EMS organization, management and operations in consideration of national models and state-of-the-art practices.
- 2.2 Redesign EMS organization, management and operations based on assessment findings.
- 2.3 Assure that EHMSA has an enforcement mechanism to require that current and emerging quality standards for all facets of EMS are achieved
- 2.4 Develop formal qualifications, credentials and duties of EMT basic, intermediate and paramedic personnel in a manner consistent with National Highway Traffic Safety Administration standards.
- 2.5 Determine if there are a sufficient number of emergency personnel who are multi-lingual.

### **Goal 3:**

**Ensure an adequate supply of paramedics through 2007.**

#### **Objectives:**

- 3.1 Assess the impact of limited staff resources on utilization of emergency services.
- 3.2 Design and develop mechanisms to recruit and retain an adequate supply of paramedics through FY 2006
- 3.3 Develop and implement scholarship and/or low cost training/retraining programs for paramedics to meet national standards for emergency medical technician and paramedic qualifications.

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### **Goal 4:**

**Achieve or exceed NHTSA standards for critical and non-critical ambulance “response” times.**

#### **Objectives:**

- 4.1 Assist the DCFEMS to reduce response time to national standards for basic life support and advanced life support transport.
- 4.2 Increase the numbers of the rapid response units.
- 4.3 Propose new standards for advanced life support licensure for commercial ambulance services.

### **Goal 5:**

**Reduce non-emergency utilization for ambulance and paramedic services.**

#### **Objectives:**

- 5.1 Develop and implement public education campaign on the appropriate use of 9-1-1
- 5.2 Monitor results achieved by educational campaigns and revise strategies as needed.

### **Goal 6:**

**Develop an appropriate methodology for determining emergency department staffing, emergency department bed capacity and associated inpatient bed capacity.**

#### **Objectives:**

- 6.1 Form a project work group composed of representatives from DOH (health statistics, planning, emergency medical services, primary care), local hospital emergency departments, American College Emergency Physicians, local medical schools, DCHA, DCFEMS.
- 6.2 Conduct data collection and analysis of emergency department utilization.
- 6.3 Publish and distribute a report on the findings from the emergency department studies.

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### **Goal 7:**

#### **Enhance EMS system preparedness for weapons of mass destruction.**

##### **Objectives:**

- 7.1 Expand list of reportable disease to include potential biological agents used as weapons.
- 7.2 Develop and implement programs to inform and educate health care providers about bio-terrorism recognition and response.
- 7.3 Introduce legislation to require volunteer EMS units to comply with major disaster plans.
- 7.4 Establish, in coordination with the Metropolitan Council of Governments, inter-jurisdictional mutual aid agreements.
- 7.5 Monitor the pharmacy stockpile to assure inventory levels of immunizations, antidotes and personal protective gear consistent with District's Response Plan.
- 7.6 Design and implement an EMT training module on weapons of mass destruction and require that this module be completed for certification and re-certification.



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### **VII. APPENDIX**

Total Hours of Closure and Diversion of Emergency Departments

Emergency Visits Provided by District of Columbia Hospitals for Calendar Year 2001

Emergency Department Visits in the District of Columbia 1994-2000

Average EMS Calls per Hours by Station Catchment

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HOSPITAL	2000	2001	% Change
GSECH	37429	44972	20.15%
Children's Hospital	47706	62847	31.74%
Columbia Hosp. For Women	Not Available	Not Available	Not Available
DCGH	51491	34541	-32.92%
GW University Hospital	44854	46338	3.31%
Georgetown University Hospital	21756	25559	17.48%
Howard University Hospital	43784	48435	10.62%
Providence Hospital	35862	41437	15.55%
Sibley Memorial Hospital	23115	25739	11.35%
Washington Hospital Center	58826	67130	14.12%
SUB-TOTALS	364823	396998	8.82%
FEDERAL			
Veteran's Affairs Medical Center	14520	16374	12.77%
Walter Reed Army Medical Center	20195	19482	-3.53%
Malcolm Grow Medical Center AAFB	28440	30331	6.65%
SUB-TOTALS	63155	66187	8.34%
GRAND TOTALS	427978	463185	